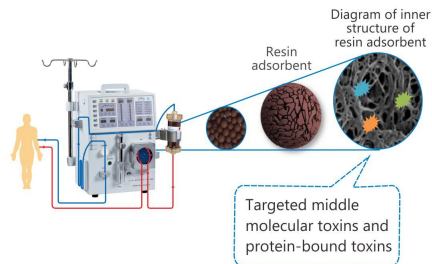


Hemoperfusion, Advanced Technology

Hemoperfusion is a blood purification method based on hemoadsorption technology. Jafron HA hemoperfusion cartridges contain brown beads made from **neutral macro-porous resin**. Under the electron microscopy it shows the 3D network structure working as the **molecule sieve** aimed at adsorbing the targeted middle molecular toxins and protein-bound toxins. Common indications of hemoperfusion are ESRD, acute poisoning, critical disease, hepatopathy, immune disease etc.



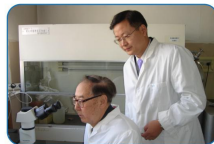
Jafron HA hemoperfusion cartridges have advantages of

- **High mechanical strength of adsorbents**
- **Large adsorptive surface area**
- **Porosity control technology**
- **Good biocompatibility⁽¹⁻²⁾**
Advanced coating technology & optimized hemodynamics

About Us

As a vertically integrated company of R&D, production and marketing, Jafron provides comprehensive solutions for blood purification.

- The biggest provider of adsorption columns since 1989
- 30 years of research and clinical experience in hemoadsorption industry
- Over 3 million application annually



- Widely used in over 50 countries
- 4500m² of GMP cleanroom
- CE₀₁₉₇, ISO9001 & ISO13485



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HEALTH TECHNOLOGY FOR A BETTER WORLD

Jafron Biomedical Co.,Ltd.

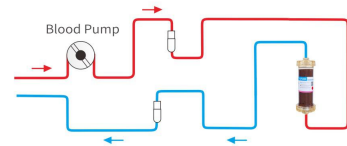
Products

Application	Model	Efficacy	Indications	Operation Modality*
ESRD	HA130	Adsorb middle and protein-bound uremic toxins (e.g. PTH, AGEs, Hcy, β 2-MG etc.)	<ul style="list-style-type: none"> • Skin Itching • Renal Osteodystrophy • Cardiovascular Disease • Refractory Hypertension • Microinflammatory state • Malnutrition • Insomnia 	(2)
Acute Poisoning	HA230	Remove drugs and poisons, especially hydrophobic substances	<ul style="list-style-type: none"> • Drug Overdose: Barcitone, Digoxin, etc. • Biotxin: Snake/Bee Venom, etc. • Pesticides: AOPP, PQ, etc. • Rodenticides • Industrial Poisoning: Zinc Sulphate, etc. • Chemotherapy--Cytostatics 	(1)(2)
Critical Disease	HA330/HA380	Remove inflammatory mediators such as cytokines, activated complement	<ul style="list-style-type: none"> • Open Heart Surgery • Sepsis, Septic Shock • Acute Pancreatitis • Coronavirus Pneumonia • Leptospirosis • Dengue • Serious Burn • MODS • ARDS 	(1)(2)(3)
Liver Disease	HA330-II	Broad-spectrum adsorb toxins such as ammonia, phenol, mercaptan, inflammatory mediators, etc.	<ul style="list-style-type: none"> • Hepatic Encephalopathy • Drug-induced Liver Damage (DIDL) 	(1) (2) (5)
	BS330	Specifically adsorb bilirubin and bile acid	<ul style="list-style-type: none"> • Hyperbilirubinemia • Hyperbileacidemia 	(4)(5) Support plasma adsorption only
	DPMAS	Remove bilirubin and bile acid while clearing inflammatory mediators	<ul style="list-style-type: none"> • Liver Transplant • Hepatitis • Liver Failure 	(5) Support plasma adsorption only
Immune Disease	HA280	Remove pathogenic factors such as IL-1, CRP, TNF- α , C3, C4, IgG, IgM, etc.	<ul style="list-style-type: none"> • Rheumatoid Arthritis • Sensitive Purpura • Psoriasis • Pemphigus • Severe Drug Eruption 	(1) (2)
	DNA230	Remove ANA, anti-ds-DNA antibodies, and pathogenic immunologic complexes	<ul style="list-style-type: none"> • Systemic Lupus Erythematosus (SLE) and Its Complications 	(1) (2) (4)

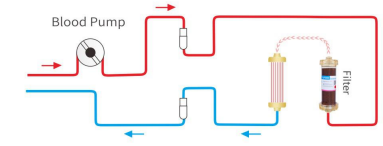
*Please refer to the next page for operation modality demonstration.

Operation Modality

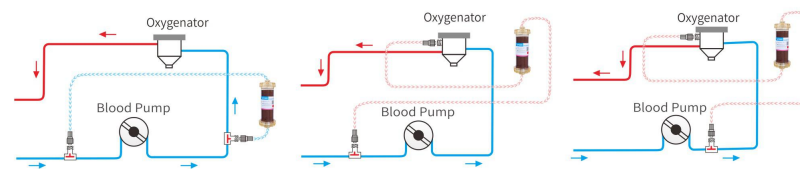
(1) Hemoperfusion (HP)



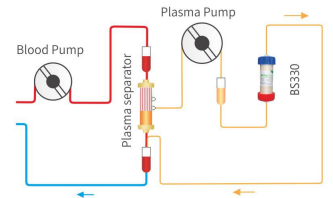
(2) HP+HD/CVVH



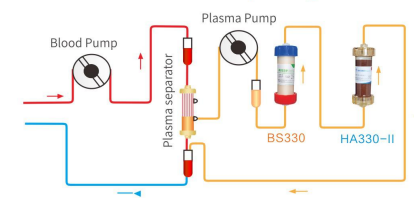
(3) HP+CPB/ECMO



(4) Plasma Adsorption (PA)



(5) Double Plasma Molecule Adsorption System (DPMAS)



Hybrid Therapies



*Hybrid therapies are recommended according to patient's condition.^[1]

References

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- [3] Ronco, C. et al. Coronavirus epidemic: preparing for extracorporeal organ support in intensive care. published online Feb 21. *The Lancet Respiratory Medicine* 8, e26 (2020).